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## SECTION HEADING

### PHYS 2121: General Physics I

#### Description

General Physics I teaches the fundamentals of physics using calculus and vectors. Uses laboratory centered instruction with calculator and computer based investigations. Topics include kinematics, Newton's Laws of motion, forces, collisions, momentum, work, and energy, energy conservation, rotational motion, angular momentum, torque, harmonic motion, oscillations, and fluids. This course includes a lab.

#### Credits

5

#### Prerequisite

MATH 1121 (can be taken concurrently)

#### Corequisite

None

#### Topics to be Covered

1. Physics and measurement
2. Motion in one dimension – speed, velocity, acceleration
3. Gravity and projectile motion
4. Newton's Laws and their applications
5. Work-Energy Theorem – Potential and kinetic energy
6. Conservation of energy
7. Momentum and its conservation – collisions, impulse
8. Rotational motion, inertia, angular momentum, and torque

#### Learning Outcomes

1. Oscillations, harmonic motion, and sound
2. Fluids and pressure

#### Credit Details

Lecture: 4

Lab: 1

OJT: 0

MnTC Goal Area(s): Goal Area 03 - Natural Sciences

#### Minnesota Transfer Curriculum Goal Area(s) and Competencies

Goal Area 03: Natural Sciences

1. Demonstrate understanding of scientific theories.
2. Formulate and test hypotheses by performing laboratory, simulation, or field experiments in at least two of the natural science disciplines. One of these experimental components should develop, in greater depth, students' laboratory experience in the collection of data, its statistical and graphical analysis, and an appreciation of its sources of error and uncertainty.
3. Communicate their experimental findings, analyses, and interpretations both orally and in writing.
4. Evaluate societal issues from a natural science perspective, ask questions about the evidence presented, and make informed judgments about science-related topics and policies.